

Annexure II: Technical Specifications (Revised)

a) Primary Specifications:

S. No.	Item	Basic Description
1	Scope of Supply	1. Coordinate Measuring Machine 2. Support Software
2	Machine Configuration	Bridge type (complete bridge including Z frame and support beams are to be made of Aluminium material) with Granite Table
3	Measuring Range	X: 500 mm Y: 700 mm Z: 400 mm
4	Guide Method	Air bearings for each X, Y and Z axis
5	Measuring Method	Glass Scale
6	Drive Speed	500 mm/sec or better
7	Drive Acceleration	2300 mm/sec ² or better
8	Resolution	0.0001 mm or better
9	Probing System	Scanning/ Touch Trigger
10	Scanning Probe Resolution	0.02µm or better
11	Temperature Compensation	Built-in with accuracy valid for the temperature range 16-26°C
12	Temperature for guaranteed accuracy	1. Variation per hour: 2 °C 2. Variation per day: 5 °C 3. Gradient/Vertical: 1 °C/m 4. Gradient/Horizontal: 1 °C/m
13	Accuracy as per ISO10360-2(2009)	Length Measuring Error ($E_{0,MPE}$): $(1.7+4L/1000)\mu\text{m}$ Length Measuring Error ($E_{150,MPE}$): $(1.7+4L/1000)\mu\text{m}$
14	Repeatability range of E_0 ($R_{0,MPL}$)	1.3µm
15	Scanning error ISO 10360-4(2000)	MPE_{THP} 2.3 µm(50sec)
16	Single stylus form error ISO10360-5(2010)	$P_{FTU,MPE}$ 1.7 µm

b) Hardware Compatibility:

1. Probe Head: Motorised Indexable head with 7.5° increment in A=105° and B= ±180°.
2. The machine should have compatibility with Multi-sensor.
3. The machine must have an option to add LASER Scanner (Typical Accuracy: 1.8µm), Surface Roughness Probe (Typical Detector range: 360µm to 0.0004µm) and Vision Probe.
4. The machine should have built-in thermal compensation unit.

c) Software Capabilities:

1. The software should be able to measure and provide all GD & T parameters e. g. point, line, plane, circle, cylinder, step cylinder, cone, sphere, different types of slots, position tolerance of point, line, plane, straightness, circularity, flatness, parallelism, concentricity, co-axiality, perpendicularity, angularity, run-out, tolerance to the variables etc.
2. All measured parameter should be displayed in 2D/3D graphic view of the software.
3. The software must have special feature like loop, formula calculator, sub-program, conditional statement, user define dialog, automatic directory generation to store the results on daily, weekly or monthly basis, export of elements in IGS & DXF format, report generation in different format like pdf, html, text, excel etc.
4. The software must support scanning of known/unknown profile, reverse engineering, export of point cloud data in machine code like FANUC, Siemens, Mitsubishi, Okuma, DXF and IGS format.
5. The software is required to facilitate features such as free-form surface comparison with 3-D CAD model, sheet metal surface comparison with 3-D model and program generation through 3-D model.

d) Other Terms and Conditions:

1. The machine should be supplied and fitted with all electrical items and necessary mechanical attachments to carryout work immediately.
2. The supplier is required to provide NABL calibration certificate after successful installation of CMM.
3. The bidder is required to quote for standard and optional essential mechanical and electrical spares and consumables.
4. The bidder shall clearly categorize the basic/standard feature as well as optional features of the equipment in order to have clear cost comparison.
5. The quoted specifications of the machine should reflect on broacher and also on manufacturer website.
6. The operation and maintenance manuals of the machine have to be supplied.
7. The price of quotation must be inclusive of successful installation of the machine with training of the operator to ensure proper functionality upon installation.
8. The bidder should have been in manufacturing/supplying of the equipment from last 10 years and must have repair, maintenance and up-gradation facility in India.
9. The bidder shall invariably furnish documentary evidence (client's certificate) in support of the satisfactory operation of the equipment.
10. The bidder should have registered office in India and with a minimum of 10 years of existence for supply and support of the equipment (company profile to be supported along with the bid including self-declaration).
11. The OEM should have experience centre in India to demonstrate the machine features and applications. The Indian Agent / distributor who is representing the

equipment should have OEM's (Original Equipment Manufacturer) Authorization to the party.

12. The supplier/OEM need to submit the details of similar machine supplied to the Govt. organizations/PSU's/IITs/renowned manufacturers in India.
13. The machine models/brands offered should have successful installations in India. List of Installations in India during last 5 years to be furnished with the technical bid along with the certificate of completion and satisfactory performance.